WHAT IS CLAIMED IS:

1. A method performed by a computer for computing modified discrete cosine transfer comprising the steps of:

computing $x(k) = \begin{cases} [-y(26-k) - y(27+k)] \cdot b_k & \text{for} \quad 0 \le k \le 8 \\ [y(k-9) - y(26-k)] \cdot b_k & \text{for} \quad 9 \le k \le 17 \end{cases}$;

computing $Y'(n) = \sum_{k=0}^{17} x(k) \cos[\frac{\pi}{36}(2k+1)n]$ for $0 \le n \le 17$;

defining $Y(0) = Y'(0)/2$; and

computing $Y(n) = Y'(n) - Y(n-1)$ for $1 \le n \le 17$.

2. An MPEG encoder/decoder comprising:

means for computing $x(k) = \begin{cases} [-y(26-k) - y(27+k)] \cdot b_k & \text{for} \quad 0 \le k \le 8 \\ [y(k-9) - y(26-k)] \cdot b_k & \text{for} \quad 9 \le k \le 17 \end{cases}$;

means for computing $Y'(n) = \sum_{k=0}^{17} x(k) \cos[\frac{\pi}{36}(2k+1)n]$ for $0 \le n \le 17$;

means for defining $Y(0) = Y'(0)/2$; and

means for computing $Y(n) = Y'(n) - Y(n-1)$ for $1 \le n \le 17$.

3. The encoder/decoder of claim 2, further comprising:

means for computing $Y'(k) = Y(k) \cdot b_k$ for $0 \le k \le 17$;

means for computing $y'''(n)=\sum_{k=0}^{17} Y'(k)\cos[\frac{\pi}{2*18}(2k+1)n]$ for $0 \le n \le 17$;

means for computing $y'(n)=\begin{cases} y'''(n+9) & \text{for} \quad 0 \le n \le 8 \\ 0 & \text{for} \quad n=9 \\ -y'''(27-n) & \text{for} \quad 10 \le n \le 26 \\ -y'''(n-27) & \text{for} \quad 27 \le n \le 35 \end{cases}$;

means for defining $y(0)=\sum_{k=0}^{18-1} Y(k)\cdot c_k$; and

means for computing $y(n)=y'(n)-y(n-1)$ for $1 \le n \le 35$.

4. An electronic circuit for fast computation of modified inverse discrete cosine transform comprising:

a first circuit for computing

$$x(k)=\begin{cases} [-y(26-k)-y(27+k)]\cdot b_k & \text{for} \quad 0 \le k \le 8 \\ [y(k-9)-y(26-k)]\cdot b_k & \text{for} \quad 9 \le k \le 17 \end{cases};$$

a second circuit for computing $Y'(n)=\sum_{k=0}^{17} x(k)\cos[\frac{\pi}{36}(2k+1)n]$ for $0 \le n \le 17$;

a third circuit for defining $Y(0)=Y'(0)/2$; and

a fourth circuit for computing $Y(n)=Y'(n)-Y(n-1)$ for $1 \le n \le 17$.

5. A method performed by a computer for computing modified inverse discrete cosine transform comprising the steps of:

computing $Y'(k)=Y(k)\cdot b_k$ for $0 \le k \le 17$;

computing $y'''(n)=\sum_{k=0}^{17} Y'(k)\cos[\frac{\pi}{2*18}(2k+1)n]$ for $0 \le n \le 17$;

computing

$$y'(n)=\begin{cases} y'''(n+9) & \text{for} \quad 0 \le n \le 8 \\ 0 & \text{for} \quad n=9 \\ -y'''(27-n) & \text{for} \quad 10 \le n \le 26 \\ -y'''(n-27) & \text{for} \quad 27 \le n \le 35 \end{cases};$$

defining $y(0)=\sum_{k=0}^{18-1} Y(k)\cdot c_k$; and

computing $y(n)=y'(n)-y(n-1)$ for $1 \le n \le 35$.

6. An electronic circuit for fast computation of computing modified inverse discrete cosine transform comprising:

a first circuit for computing $Y'(k)=Y(k)\cdot b_k$ for $0 \le k \le 17$

a second circuit for computing $y'''(n)=\sum_{k=0}^{17} Y'(k)\cos[\frac{\pi}{2*18}(2k+1)n]$ for $0 \le n \le 17$

a third circuit for computing

$$y'(n)=\begin{cases} y'''(n+9) & \text{for} \quad 0 \le n \le 8 \\ 0 & \text{for} \quad n=9 \\ -y'''(27-n) & \text{for} \quad 10 \le n \le 26 \\ -y'''(n-27) & \text{for} \quad 27 \le n \le 35 \end{cases}$$

a fourth circuit for defining $y(0)=\sum_{k=0}^{18-1} Y(k)\cdot c_k$; and

a fifth circuit for computing $y(n)=y'(n)-y(n-1)$ for $1 \le n \le 35$.